

A Conversation with Kayla Ivey

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Carmen Drahl

Lead formulator of Purell hand sanitizer talks about rising to COVID-19's challenges and gaining a soapbox on Twitter.

To say **hand sanitizer** made headlines in 2020 is an understatement. As consumers **snapped up every bottle** in the early days of the COVID-19 pandemic, Kayla Ivey set to work. Ivey is a product development scientist at GOJO Industries, where she is lead formulator for the Purell brand of hand sanitizer. The company activated its demand-surge preparedness team in December 2019, in response to news of pneumonia caused by a virus that we now know as SARS-CoV-2. Over subsequent months, the company **responded to staggering demand** by activating about 230,000 m² of manufacturing space, adding multiple new facilities, and hiring over 500 additional employees.

Meanwhile, Ivey took on more projects than ever, including launching multiple new hand sanitizer products. In August 2021, she introduced herself on Twitter using **#BlackinChemRollCall**—a hashtag for Black scientists to talk about their expertise and their journey in chemistry—and shared photos of two products she had developed. The tweet generated thousands of likes and scores of appreciative comments.

Carmen Drahl talked with Ivey about her work and how she has used her newfound soapbox. This interview was edited for length and clarity.

What general components make up hand sanitizer, and what's the purpose of each?

The main component is the active ingredient, the thing that's actually doing the germ-killing. In our sanitizer, it's



Credit: Amanda Hemstreet Photography

mostly ethanol. The US Food and Drug Administration sets the **minimum concentration of ethanol in hand sanitizers at 60%**. Because the sanitizer is mostly ethanol, we need a denaturant to make the product undesirable to consume. There are a couple of options; isopropyl alcohol is typically used as the denaturant in Purell sanitizers.

For our gel sanitizers, we have gelling agents, usually water-soluble polymers. For the foam sanitizers, we have foaming agents, usually a water-soluble surfactant. The rest of the formula is mostly skin moisturizers.

Tell me how the early days of the pandemic unfolded for you.

The company ramped up manufacturing starting in January 2020. I remember having a meeting about the ramp-up at the end of that January, but at the time I didn't think it was

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that big a deal. It seems silly now to say that I didn't realize what the impact was going to be. I went to Niagara Falls; I came back March 8, 2020. Not long after getting back from my vacation—boom, we're working from home. During the last week of April, I was called into a meeting and given six formulation projects. The pandemic definitely elevated the use of hand sanitizer, and these new products met consumers' preferences for formulation and usage.

That's when I realized that sanitizer, and Purell specifically, was going to be thrust into the spotlight. In a normal year, I would only have two or three projects, and usually we give ourselves 1–2 years for each one. Getting six new projects and being told that almost all of them needed to be launched within the next 6–9 months was a little wild.

What was it like for your #BlackInChemRollCall tweet to, if you'll pardon the expression, go viral?

In 2020 I tweeted something very similar, and it got some likes. But in 2021 almost the exact same tweet went a lot further. It was kind of shocking. I tweeted it and just went about my day. When I checked back, I saw a text from my uncle, who said, "Did you know your tweet's going crazy?" I think something that helped with the second tweet is that by that point, two new hand sanitizers I'd launched were on shelves. One of those, the moisturizing two-in-one product, was a project I got at that April 2020 meeting. You could buy both products on Amazon, and I was the formulator who made them. Some people were responding to the tweet to say, "I just bought this yesterday. That's so cool that you made this!"

How have you been using Twitter to encourage Black excellence in chemistry?

Because of that tweet, teachers and professors have invited me to speak to their high school and college chemistry classes. One of the main things I try to get across is how far you can go with a bachelor's degree, like me. Then I bring in friends with advanced degrees to show how far you can go with your master's or your PhD.

My transition to getting hired at GOJO was pretty seamless, because the company already had a relationship with my university. I was hired a week after I graduated. After starting at GOJO, I met scientists in advanced roles who only had a bachelor's degree, and I realized that I could work my way up. I've been here ever since, and I've been able to move around within the company.

Also, it wasn't until I got to college that I found out that a lot of science PhD programs are funded and that you can actually get a stipend. I think some people are discouraged about even going into grad school for science because they



Ivey developed two new formulations of Purell hand sanitizer, launched in 2020 and 2021, an extra-strength formulation with 85% ethanol instead of the more typical 70%, and another with a blend of moisturizing ingredients. Credit: GOJO Industries

think they have to fork over the money for it. So something I try to do is let students know that there's a lot more at their fingertips than they think.

What has working through these unprecedented times taught you about yourself?

It taught me that I easily adapt to change, more than I thought I could. It pushed me out of my comfort zone.

The structure of working from home and social distancing helped me become a better bench chemist. We had to reserve lab time to make sure that there wouldn't be too many people in the lab at once. Since I was working on sanitizer, I could in theory kick someone out if I wanted to, but I didn't do that.

When I was home, I did a lot of ideation before going into the lab, to make my lab time run as smoothly as possible. I did a lot more paper exercises and research with my laptop. I'm a lot more confident in my abilities. I was able to make a final product with fewer iterations along the way, which as a chemist is very exciting.

Carmen Drahl is a freelance contributor to [Chemical & Engineering News](#), the independent news outlet of the American Chemical Society.